What is claimed is:

1. A method of identifying changes in biopolymers, the method comprising the steps:

(a) providing different sets of labelled detector molecules in which:

at least two sets of said labelled detector molecules are specifically bondable to a certain region in said biopolymers; and

the labels of said labelled detector molecules of one of said at least two sets differ from the labels of said labelled detector molecules of another of said at least two sets;

(b) exposing said labelled detector molecules to said biopolymers under conditions permitting bonding reactions to occur to form bondings between said labelled detector molecules and said biopolymers; and

(c) evaluating said bondings via said different labels whereby changes in said biopolymers may be identified.

2. The method according to claim 1, wherein said biopolymers are immobilized at least before step (b).

3. The method according to claim 2, wherein said biopolymers are fixedly arranged on a carrier or in a matrix.

4. The method according to claim 1, wherein said bonding reactions between each of said labelled detector molecules and said biopolymer are carried out simultaneously or successively.

5. The method according to claim 1, wherein said bonding reaction in step (b) is a nucleic acid hybridization or an antigen/antibody reaction.

6. The method according to claim 5, wherein said nucleic acid hybridization is an *in situ* hybridization.

7. The method according to claim 1, wherein said biopolymers are nucleic acids or polypeptides.

8. The method according to claim 7, wherein said nucleic acids are DNA or RNA.

9. The method according to claim 7, wherein the nucleic acids are chromosomal DNA.

10. The method according to claims 1, wherein the labelled detector molecules are nucleic acids or antibodies.

11. The method according to claim 10, wherein said different nucleic acids stem from different chromosome region-specific DNA libraries.

12. The method according to claim 10, wherein each of said sets of labelled detector molecules contains one or more labels different from at least one label contained in another of said sets.

~~13. The method according to claim 12, wherein the label comprises a fluorescent dye.~~

14. The method according to claim 1, wherein said evaluating step further comprises the steps:

scanning said biopolymers with a scanning device in the longitudinal direction of said biopolymers; and

recording the intensities or intensity ratios of said labels of said labelled detector molecules.

15. A diagnostic kit for identifying changes in biopolymers comprising:

a first set of detector molecules labelled with a first label;

a second set of detector molecules labelled with a second label, said second label differing from said first label;

said first and second sets of detector molecules capable of forming bondings with biopolymers whereby evaluation of said bondings permits identification of changes in said biopolymers.

16. The diagnostic kit according to claim 15, wherein said sets of detector molecules are capable of forming bondings with material selected from the group consisting of human chromosomal material and tumor material.

17. The method according to claim 1, wherein said step of providing different sets of labelled detector molecules further comprises providing at least one set of a localized calibrating probe, said probe comprising calibrating labels.

18. The method according to claim 17, wherein said calibrating labels comprise all of said labels of said labelled detector molecules of said at least two sets.

19. The method according to claim 1, wherein said step of providing different sets of labelled detector molecules further comprises providing a number of localized calibrating probes, said number being one less than the total number of said labels in said labelled detector molecules, each of said probes comprising two labels; and said evaluating step further comprising correcting positional deviations of said bondings by pairwise comparison of said calibrating probes.

20. The method according to claim 17, wherein positional transformations of said bondings are corrected by using a sufficient number of said probes.

21. The method according to claim 17, wherein determination of the relative shifts and positional correction of said bondings take place interactively during said step of evaluating.

22. The method according to claim 17, wherein determination of the relative shifts and positional correction of said bondings take place automatically.

23. The method according to claim 17, wherein said labels of said calibrating probes have known or reproducible constant intensity whereby the signal intensities of all of said labels can be standardized.

24. The method according to claim 23, wherein said calibrating probes are fluorescence-labelled DNA probes.

25. The method according to claim 23, wherein said calibrating probes are fluorescence-labelled particles.

26. The method according to claim 17, wherein said calibrating probes are simultaneously used for positional correction.

27. The diagnostic kit according to claim 15, further comprising calibrating probes.

28. The diagnostic kit according to claim 27, further comprising calibrating probes for intensity standardization.

29. The diagnostic kit according to claim 27, further comprising a sufficient number of said calibrating probes to enable a direct assignment of color bands to the ISCN nomenclature.

30. The diagnostic kit according to claim 27, wherein said probes are simultaneously used for positional correction or intensity standardization.